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# THE MONIST

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GOTTFRIED WILHELM LEIBNIZ.

(1646-1716.)

THIS number of *The Monist* is devoted to a commemoration of the scientific and philosophical work of Leibniz and its influences on modern thought. It is just two hundred years since Leibniz died, and thus it is fitting, as well as useful, that we should all remember just now rather particularly the mortal Leibniz and his undying work. The articles here outlined for this and the following issue of *The Monist* have been collected and prepared under the editorship of Mr. P. E. B. Jourdain, an English scholar well known to *Monist* readers through his many recent contributions on the subjects of physics and logic.

The first article is an account of Leibniz's life and work by C. Delisle Burns, and it gives a view of the various activities of Leibniz which are of general interest, and particularly the great part he took in the founding of academies. A description of Leibniz's logic by Philip E. B. Jourdain then follows. It has become more and more recognized of late years that logic was at the foundation of both Leibniz's mathematics and his metaphysics, and we have a most instructive example of the intimate connection of his logical and mathematical ideas when we study Leibniz's early mathematical manuscripts, which were published long after his death and are here translated by J. M. Child for the first time. Another article of

importance in connection with Leibniz's mathematics is Prof. Florian Cajori's account of his binary system of numeration that he held in great affection as leading to an arithmetic which was an "image of creation."

The influence of Descartes on Leibniz's philosophy is studied by C. Delisle Burns, and the influences that formed Leibniz's monadism are dealt with by T. Stearns Eliot. The author last mentioned also writes on the analogy between Leibniz's monads and the "finite centers" of Bradley's monism.

The last article brings us to Leibniz's modern influences. The logical influence of Leibniz on Lambert and later writers is touched upon in the above article on Leibniz's logic. It is seen also in a study of Bolzano by Miss Dorothy Maud Wrinch which will follow in the same connection in the January number of *The Monist*. It is conspicuous in the modern work of Frege, and of Peano, Russell and Couturat. It must be remembered of course, that the splendid work of Frege, which was almost wholly unaffected by any other logician but Leibniz, has combined with the work of Peano to influence the modern school of mathematical logicians.

A realization was given to part of Leibniz's ideal by Hermann Grassmann. It was intended that this number of *The Monist* should also celebrate the seventieth anniversary of Grassmann's prize for an essay on the connection of his geometrical analysis with Leibniz's Characteristic, which was awarded in 1846 by the Jablonowski Society of Leipsic. But this must be deferred until January. Then we shall present three articles by A. E. Heath. The first will be a critical sketch of the life and work of one whose writings contain the germ of many modern developments in mathematics and mathematical physics. Grassmann shared with Thomas Young the distinction of winning fame in both philology and mathematics. His biog-

raphy shows him as a homely and lovable man of wide interests, possessing to the last indomitable energy and unshaken faith in the power of his work. In the second article an analysis will be made of the factors which were and are at the root of the neglect of the work not only of Grassmann but also of all writers on the abstract questions of a basic science of form. The third article will show how Grassmann, starting from the geometrical Characteristic of Leibniz, applied the principles of his work previously published in 1844 to the realization of a true geometrical analysis. The author claims that in this analysis we have a complete fulfilment of the high hopes of Leibniz, and shows the relation of their work to modern non-metrical geometries and to symbolic analysis.

Portraits of Leibniz, Lambert, Bolzano, Grassmann, Frege, Peano and Russell, and some details about these portraits, will appear in the current (October) number of *The Open Court*.

The following gives the books most frequently cited in this number together with the abbreviations used throughout.

## BIBLIOGRAPHY.

## ABBREVIATIONS

Cantor: Moritz Cantor, *Vorlesungen über die Geschichte der Mathematik*. Vol. II, 2d ed., Leipsic, 1900; Vol. III, 2d. ed., Leipsic, 1901.

Couturat, 1901: Louis Couturat, *La Logique de Leibniz d'après des documents inédits*. Paris, 1901.

Couturat, 1903: Louis Couturat, *Opuscles et fragments inédits de Leibniz*. Paris, 1903.

On the nature and object of Russell's and Couturat's work on Leibniz, see Russell, pp. v-viii, 2-5, and *Mind*, N. S., Vol. XII, 1903, pp. 177-201.

Couturat made a profound study of Leibniz's published works and arrived independently at the same conclusion as Russell: that Leibniz's Metaphysics rests solely on the principles of his Logic. After this he extracted (and published in 1903) some of the most

interesting manuscripts of Leibniz preserved in the Royal Library of Hanover; and had in consequence to rewrite a large part of the book of 1901, but he did not have to modify his plan nor even to correct his chronological conjectures (Couturat, 1901, pp. x-xiv).

- De Morgan's *Newton*: Augustus De Morgan, *Essays on the Life and Work of Newton*. Edited with Notes and Appendices by Philip E. B. Jourdain. Chicago and London, 1914.
- G: C[arl] I[manuel] Gerhardt (Ed.), *Die philosophischen Schriften von G. W. Leibniz*. Berlin, 1875-1890.
- G., 1846: C. I. Gerhardt (Ed.), *Historia et Origo Calculi Differentialis a G. G. Leibnitio conscripta. Zur zweiten Säcularfeier des Leibnizischen Geburtstages aus den Handschriften der Königlichen Bibliothek zu Hannover*. Hanover, 1846.
- G., 1848: C. I. Gerhardt, *Die Entdeckung der Differentialrechnung durch Leibniz, mit Benutzung der Leibnizischen Manuscripte auf der Königlichen Bibliothek zu Hannover*. Halle, 1848.
- G., 1855: C. I. Gerhardt, *Die Geschichte der höheren Analysis. Erste Abtheilung* [the only one which appeared]: *Die Entdeckung der höheren Analysis*. Halle, 1855.
- G. Bw.: C. I. Gerhardt (Ed.), *Der Briefwechsel von Gottfried Wilhelm Leibniz mit Mathematikern*. Vol. I, Berlin, 1899. Cf. De Morgan's *Newton*, p. 106.
- G. math.: C. I. Gerhardt (Ed.), *Leibnizens mathematische Schriften*. Berlin and Halle, 1849-1863. See De Morgan's *Newton*, pp. 71-72.
- Guhrauer: G. E. Guhrauer, *Gottfried Wilhelm Freiherr von Leibnitz: Eine Biographie*. 2 vols. Breslau, 1846.
- Klopp: Onno Klopp (Ed.), *Die Werke von Leibniz*. Hanover, 1864-1877.
- Latta: Robert Latta (Tr.), *Leibniz: The Monadology and other Philosophical Writings*. Translated, with Introduction and Notes. Oxford, 1898.
- Merz: John Theodore Merz, *Leibniz*. No. 8 of Blackwood's "Philosophical Classics for English Readers." Edinburgh and London, 1907.
- Montgomery: George R. Montgomery, *Leibniz: Discourse on Metaphysics, Correspondence with Arnould, and Monadology*. Chicago and London, 1902.

Rosenberger: Ferdinand Rosenberger, *Isaac Newton und seine physikalischen Principien. Ein Hauptstück aus der Entwicklungsgeschichte der modernen Physik*. Leipsic, 1895.

In Rosenberger's book, the passages which are relevant to Leibniz's work are as follows: Leibniz's mathematical correspondence with Oldenburg from 1674 (series for area of circle), Collins, and Newton (pp. 439-448); a short note on Leibniz's manuscripts (p. 447); Leibniz's publications of 1684 and 1686 (pp. 448-450); the progress of the calculus in the hands of Leibniz, the Bernoullis, and others (pp. 455-460); and the events which led up to the controversy and the controversy itself (pp. 460-506). Besides this, Leibniz's physical views, and so on, are mentioned on pp. 231-234, 239-247, 411-412, 512, 514-520.

Russell: Bertrand Russell, *A Critical Exposition of the Philosophy of Leibniz, with an Appendix of Leading Passages*. Cambridge, 1900.

Sorley: W. R. Sorley, "Leibnitz", *Encyclopaedia Britannica*, 9th ed., Vol. XIV, pp. 417-423. Edinburgh, 1882.

The same writer's article on Leibniz in the latest (11th) ed. of this *Encyclopaedia* (Vol. XVI, Cambridge, 1911, pp. 385-390) is almost a reproduction of the above article: the body of the article has been somewhat condensed and the Bibliography at the end expanded.

Fren: A. Trendelenburg, *Historische Beiträge zur Philosophie*. 3 vols. Berlin, 1867.

U: Friedrich Ueberweg, *System der Logik und Geschichte der logischen Lehren*. 3d ed. Bonn, 1868.